

**A Survey to Determine the Level of Knowledge on Chronic Pain and its
Management amongst Fifth year Medical students at the University of
Stellenbosch**

Thesis presented by

Izette Minnaar

MBChB (Stell), FCA (SA)

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Faculty of Health Sciences

University of Stellenbosch

Department of Anesthesiology and Critical Care

Promotor:

Latifa Firfiray

MBChB(UCT), Dip Obst(SA), DA(SA), MMed(Anes)(Stell), FCA(SA)

Department of Anesthesiology and Critical Care

Faculty of Health Sciences

University of Stellenbosch

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DECLARATION

I hereby declare that the content of this thesis is my own original work and that it has not previously been used in whole or part in obtaining another degree or diploma.

Signature.....

Date.....

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A Survey to determine the level of knowledge on chronic pain and its management amongst fifth year medical students at the University of Stellenbosch

¹**I Minnaar**, MB ChB (Stell)

²**L Firfiray**, MB ChB (UCT), Dip Obs (SA), MMed (Anes)(Stell), FCA (SA)

¹*Department of Anesthesiology and Critical Care, University of Stellenbosch, South Africa*

²*Department of Anesthesiology and Critical Care, University of Stellenbosch, South Africa*

Corresponding author: I Minnaar (izetteminnaar@gmail.com)

Background. Poorly controlled and undertreated chronic pain is a global phenomenon, with a significant negative impact on patients' health and quality of life, and results in increased healthcare utilization.^[1] Lack of knowledge on pain management amongst primary health care physicians is recognized as one of the key barriers to effective pain treatment^[2]. Evidence suggests that pain education in undergraduate medical curricula is inadequate preparation for professional practice.^[3]

Objective. We aimed to determine the level of knowledge on chronic pain, and the management thereof, amongst fifth year medical students at the medical school of the University of Stellenbosch.

Methods. A group survey, by means of a questionnaire, was conducted amongst fifth year medical students attending an academic lecture.

Results. There were 154 participants out of a class of 203 students (response rate of 75.86%). The mean overall score for the questionnaire was 40.48%, with 74.03% of participants scoring less than 50%, which is the required mark set by the University of Stellenbosch to pass the final year of undergraduate medical training.^[4]

Conclusion. Knowledge on chronic pain, and the management thereof, amongst fifth year medical students at the University of Stellenbosch is deficient. This suggests that these students are poorly equipped to manage patients with chronic pain in the primary health care setting. We propose that the current undergraduate medical curriculum be changed to incorporate a comprehensive chronic pain management course. A follow up study can be done to evaluate if the proposed course does indeed improve the students' knowledge.

OORSIG

Agtergrond

Swak gekontroleerde en onvoldoende behandelde chroniese pyn is 'n globale probleem met ernstige negatiewe implikasies vir pasiënt gesondheid, lewenskwaliteit en lei tot 'n toename in gesondheidsorg verbruik. Die gebrek aan die nodige kundigheid van primêre gesondheidsorg geneeshere in die hantering van pasiënte met chroniese pyn word erken as een van die sleutel oorsake van hierdie probleem en daar is beduidende bewys dat die voorgraadse onderrig van mediese studente hul nie voldoende voorberei om hierdie pasiënte in die praktyk te behandel nie.

Doelwitte

Ons doelwit was om die kennis van vyfde jaar mediese studente aan die Mediese Skool van die Universiteit van Stellenbosh rakende chroniese pyn en die hantering daarvan, te evalueer.

Metodiek

'n Opname, deur middel van 'n vraelys is voorgelê aan die vyfde jaar klas van voorgraadse mediese studente.

Resultate

154 (75.86%) studente uit 'n totale klasgroep van 203 kandidate het die vraelys voltooi. Die gemiddelde punt was 40.48%, met 'n totaal van 74.86% kandidate wat minder as 50% gemiddeld behaal het.

Slotsom

Die opname het getoon dat daar wel gebrekkige kennis van chroniese pyn en die hantering daarvan onder senior studente aan die Mediese Skool van die Universiteit van Stellenbosch is. Dit suggereer dat hierdie groep studente nie oor die nodige kennis en vaardighede beskik om pasiënte met chroniese pyn in die primêre gesondheidsorg sektor te hanteer nie. Ons voorstel is dus dat 'n omvattende module oor chroniese pyn ingesluit word in die huidige voorgraadse curriculum. 'n Opvolg studie kan gedoen word om die verbetering van die studente se kennis na hierdie voorgestelde kursus te evalueer.

Introduction

The International Association for the Study of Pain defines pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage”.^[5]

Acute pain, defined as pain lasting less than 3 months, serves a vital function as a warning signal of tissue damage resulting from e.g. trauma, infection or inflammation. It is however self-limiting, generally responding favorably to simple and conventional treatments, and should subside after the injured tissue has healed.^[6]

Chronic pain is defined as “pain which has persisted longer than three months or beyond normal tissue healing time”.^[6] Chronic pain results from changes in the peripheral and central nervous systems, which contribute to its persistence. Due to the alterations in central nervous system morphology, physiology and neurochemistry, chronic pain is viewed as a neurological disorder akin to other chronic neurological conditions such as epilepsy, Parkinson’s or Alzheimer’s disease. These conditions have analogous alterations in the central nervous system.^[6] Therefore, chronic pain is a disease or illness in its own right.^[7] Chronic pain is considered to have no useful biological role, is complex to manage and causes persistent patient discomfort.^[6]

Pain can be classified based on pain physiology (nociceptive, neuropathic, inflammatory), intensity or time course (acute versus chronic). Chronic pain is more complex than acute pain. It can have many different etiologies e.g. persistent postoperative pain, cancer pain, dysfunctional pain such as irritable bowel syndrome, or it can accompany many of the chronic diseases and disorders such as arthritis, diabetes or HIV/AIDS. Due to its varied etiology and neuropathophysiology, the management of chronic pain is much more complex than that of acute pain, and undergraduate medical students need to be specifically trained to recognize and holistically manage patients with this complex disease.

The exact incidence of chronic pain is difficult to gauge as it depends on case definitions and study methodology. A World Health Organization survey of approximately 26 000 primary care patients on five continents, demonstrated a prevalence of chronic pain of 22%.^[8] In the United States of America, it has been estimated that 50 million individuals live with chronic pain.^[9] Viewed in perspective, more patients suffer from chronic pain than from heart disease, diabetes mellitus and cancer combined.^[9]

South African data from 2013 demonstrated that 437 of 1066 patients attending primary healthcare clinics experience chronic pain.^[10] This burden is compounded by the significant role of Human Immunodeficiency Virus (HIV) infection in the South African context. Data from 2015 suggest that an estimated 39% to 85% of individuals with HIV infection suffer from chronic pain with its attendant consequences^[11].

Patients report poor treatment of chronic pain, and numerous studies relate this to the poor knowledge of physicians and senior medical students on this complex topic.^[2,3,7,9]

A recently published descriptive study by WN Rauf, et al.^[12] in 2013, which evaluated the impact of chronic pain on the quality of life of patients attending primary health care clinics in South West Tshwane, found that a substantial proportion of these patients experienced significant chronic pain which impacted their lives in multiple ways. An alarming finding of their study was that only 25% of the patients suffering from chronic pain, reported good pain relief after being treated. This means that 75% of the patients surveyed are in need of substantially improved pain management. The findings of this study are noteworthy as it is the first South African study highlighting the significant negative impact that untreated and poorly treated chronic pain has on primary healthcare patients.

The socioeconomic consequences of chronic pain affect not only the patient but also their families and society at large. For the patient this includes reduced quality of life, negative impact on relationships, job loss and increased rates of depression.^[7] The healthcare costs of chronic pain have been estimated at five hundred billion dollars per annum in the United States alone.^[7]

The majority of patients with chronic pain seek medical help from their primary care physician.^[7] Managing chronic pain forms an integral part of patient care, and a doctor's level of expertise in this field is crucial for ensuring an adequately pain-free life for the patient.^[2]

Despite the advancement of knowledge in this field of medicine, and the development of exciting new options of pharmacological and invasive interventions, a significant number of patients continue to receive inadequate treatment.

Many international studies^[2,13,14], including the recently published APPEAL^[15] (Advancing the Provision of Pain Education And Learning) study, suggest that this lack of knowledge of physicians can be attributed to insufficient training of undergraduate medical students on the topic of pain. Medical students are inadequately prepared to competently assess and manage patients with acute and chronic pain.^[3] As a consequence of this poor undergraduate pain education, postgraduate trainees and practicing physicians are unable to render a comprehensive pain management plan for their patients.^[3]

The APPEAL study was the first ever review of pain education for undergraduate medical students in Europe.^[15] The curricula from 242 undergraduate medical schools in 15 European countries were reviewed during a six-month period from April to September 2013. The study revealed that there was an alarming deficiency of dedicated pain education in undergraduate medical schools, and that this inadequacy leaves future doctors unprepared to appropriately manage pain. Even where compulsory courses on pain were in place in certain curricula, it represented on average only 12 hours or 0.2% of the entire six-year medical degree program. It was evident in this study that the teaching of pain management was not a priority in European undergraduate medical school curricula and it highlighted an urgent need to address the gaps in the provision of such education.

Recommendations from the APPEAL study Expert Taskforce included the implementation of a European framework for pain education, comprising of both pain specialists and pain educators, to ensure consistency in pain teaching within the

undergraduate medical curricula of European medical schools. They proposed the introduction of compulsory pain teaching for all undergraduate medical students, which would enable them to acquire a defined minimum competency level in pain management. The ultimate vision of the APPEAL Task Force is the improvement of pain management for the millions of people suffering from chronic pain.

Several studies^[9,16] in the USA have also reported a lack of comprehensive pain education in undergraduate medical curricula^[9], and that the current training does not meet the needs of physicians, patients or society as a whole.^[16] They suggested that the cornerstone of addressing the pain crisis was by improving the undergraduate medical students' education on the subject. They felt that this strategy would result in future physicians having a better understanding of the complexity of chronic pain and its management and it would instill a feeling of empathy towards such patients.^[9]

Motivation

We hypothesized that at the University of Stellenbosch, undergraduate medical students' knowledge on the recognition and management of chronic pain is inadequate.

Pain management is not taught as a separate undergraduate entity at our university. Undergraduate medical students are budding primary care physicians who have to be able to manage patients with chronic pain. We therefore undertook a survey amongst fifth year medical students at our university to assess their knowledge on chronic pain and its management.

Methods

Approval for the study was obtained from the Ethics Committee of the Faculty of Health Sciences, University of Stellenbosch. The study was a cross-sectional survey and participation was voluntary and confidential. A comprehensive questionnaire (Appendix 1) comprising of 18 questions on basic definitions, classification and management of chronic pain, was designed by the authors.

The 2014 class of fifth year medical students was presented with the questionnaire. They were approached as a group during one of their academic lectures, and requested to complete the questionnaire anonymously. The students' willingness to complete and return the questionnaire was considered implied consent for participation.

Individual questions were checked for overall correctness. A correct answer was scored one point and a wrong answer or 'not known', was scored as a zero. The percentage of correct responses for each questionnaire was calculated and entered into a Microsoft Excel^R Spreadsheet. A pass mark of 50% was considered acceptable.

Results

Questionnaires were completed by 154 of the registered 203 students (75.86% response rate). Results were reported as mean \pm standard deviation and a 95% confidence interval. The mean knowledge score of the sample (n=154) was 40.48% with a standard deviation of 13% and a range from 6% to 80%. 74.03% of participants scored less than 50%, the required pass mark set by the University of Stellenbosch (Figure 1).

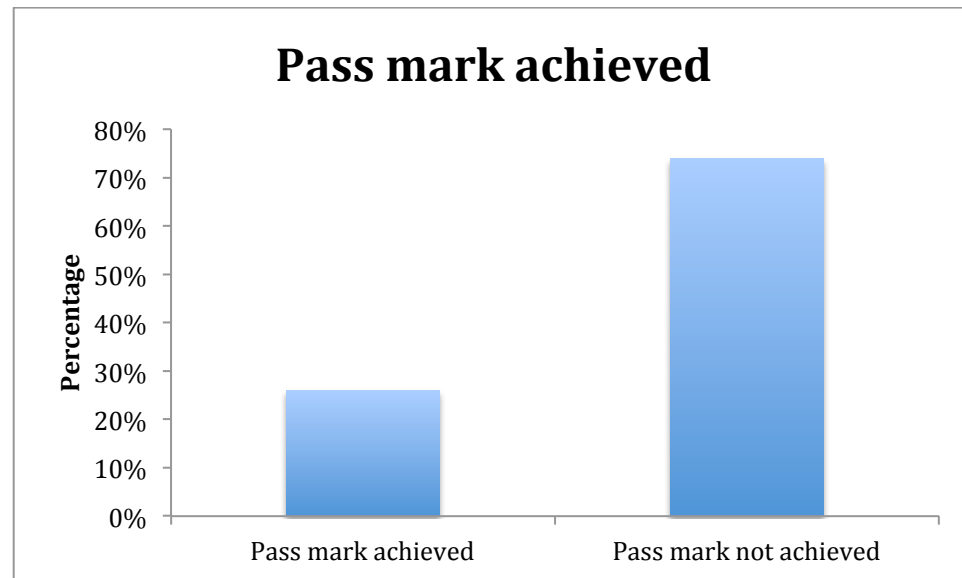


Figure 1. Percentage of students who achieved/not achieved the pass mark.

Discussion

In the population of fifth year medical students from which our sample was drawn, we can say with 95% confidence that the true knowledge of the students lies between 38.4% and 42.6%. The required pass mark set by the University of Stellenbosch to pass the final year of undergraduate medical training is 50%^[4]. As 74.03% of the participants scored less than 50% average, this indicates a lack of knowledge amongst the majority of participants surveyed.

The poor knowledge revealed by this study provides insight into the possible shortcomings of the current undergraduate medical training curriculum regarding the teaching of chronic pain and its management. The absence of appropriate pain education at undergraduate level could mean that significant numbers of medical students graduate with limited knowledge and understanding of how best to manage patients with chronic pain in clinical practice.

Chronic pain forms a substantial proportion of primary health physician visits, with back pain, joint pain and headache being most prevalent.^[14] Considering the

significant incidence of chronic pain and the huge burden thereof on patients, the health system and the economy, coupled with the significant impact of HIV in the South African context^[11], this need will have to be addressed.

Wilson, et al.^[17] reported on the effectiveness of a brief basic science seminar on pain for first year medical students. They compared the attitudes of first year medical students towards treating pain patients before, and five months after, the seminar. After attending the seminar, the students had an increased understanding of the complexity of pain and a greater appreciation that pain is a real phenomenon and not imaginary. Post seminar, the students also developed a stronger belief that working with these patients with chronic pain can be a very rewarding experience.

A major strength of our study is the proposal of the implementation of a more comprehensive training program on chronic pain in the undergraduate medical curriculum.

We foresee that the introduction of a multidisciplinary dedicated pain seminar, which teaches chronic pain within its biopsychosocial framework and reflecting its multi-dimensional nature, will equip our students with the knowledge, confidence and skills to become better primary care physicians.

Limitations of our study include that the questionnaire was made available on a single day to one particular class. The possibility exists that this group might not fully represent the knowledge of the rest of the fifth year students. Although the study was anonymous and voluntary, students who felt that their knowledge on chronic pain and its management were inadequate, may have been too intimidated to complete the questionnaire.

Conclusion

Under-treatment of chronic pain is a global phenomenon, and the basic knowledge on pain management amongst primary health care providers continues to be deficient, with poor undergraduate training being a large contributory factor.

The findings of our survey are in agreement with those conducted internationally, showing that the current basic knowledge on chronic pain and its management amongst our students is not adequate to prepare them for managing these patients in a primary health care setting.

Based on strong evidence in the international literature on the impact of structured pain education^[17], we propose that a separate Pain Module be introduced into the undergraduate medical curriculum at the University of Stellenbosch. This will enable our students to become better equipped at managing chronic pain at primary healthcare level.

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Appendix 1

Questionnaire

1. Provide a definition for pain as coined by the International Association for the Study of Pain.
2. After what period of time is acute pain considered becoming chronic pain?
3. What is the difference between nociceptive and neuropathic pain?
4. Name five predominant symptoms that would indicate that pain is neuropathic rather than nociceptive.
5. What is the commonest chronic pain condition that patients present with at primary care level?
6. Name the 3 steps of the World Health Organisation's analgesic ladder.
7. Define:
 - 7.1 Hyperalgesia
 - 7.2 Allodynia

8. HIV (Human Immunodeficiency Virus):
 - 8.1 Is chronic pain a common symptom in patients with HIV?
 - 8.2 Can antiretroviral therapy influence pain symptomatology in patients with HIV?
9. Name four classes of medications used for neuropathic pain.
10. Name two common neuropathic pain syndromes that you will likely encounter in primary care practice.
11. Besides medication, name three other treatment modalities that are used for chronic pain.
12. When all treatment options are exhausted at primary care level, to whom will you refer the patient who has persistent chronic pain?
13. Would you use morphine to manage pain in a patient with chronic non-cancer pain?
14. Would you use antidepressants in the management of chronic pain?
15. Is addiction to medication a problem in patients with chronic pain?
16. A 19-year old female had a fracture of the right ankle six months previously. She now presents with pain and swelling of the right ankle, as well as blueish discoloration of the skin. What is the likely diagnosis?